

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of claims:

Claim 1 (currently amended): A method for the production of a metal oxide, wherein at least one metal oxide precursor is dissolved in a high enthalpy carboxylic acid solvent comprising at least one carboxylic acid with a mean carbon content of ≥ 2 at least 2.2 carbon atoms in an amount of at least 60 % of the whole solvent to form a solution, and wherein said solution is then formed into droplets and flame oxidized.

Claim 2 (currently amended): The method of claim 1, wherein the carboxylic acid content is at least 75 %, ~~preferably at least 90 %, more preferably about 100 %.~~

Claim 3 (currently amended): The method of ~~claim 1 or 2~~ claim 1, wherein the at least one carboxylic acid has a mean carbon content per acid group of at least ~~2.2, preferably at least 3, more preferably about 4 to 10, most preferably about 4 to 8~~ 3.

Claim 4 (currently amended): The method of ~~anyone of the preceding claims~~ claim 1, wherein the carboxylic acid is selected from C1 to C18 monocarboxylic acids and mixtures thereof.

Claim 5 (currently amended): The method of claim 4, wherein the carboxylic acid is a mixture of formic acid and/or ~~preferably~~ acetic acid and at least one further acid with at least 3 carbon atoms, ~~much preferred a mixture of lauric acid and acetic acid, especially in a ratio of 1:1.~~

Claim 6 (currently amended): The method of ~~anyone of the preceding claims~~ claim 1, wherein at least one of the carboxylic acids comprises ~~double bonds and/or substituents, preferably polar substituents, in particular~~ one or more -OH and/or -NH₂ and/or -CONH₂ groups.

Claim 7 (currently amended): The method of ~~anyone of the preceding claims~~ claim 1, wherein the solvent has an enthalpy of at least 15 kJ/g, ~~preferably at least 20 kJ/g, more preferably at least 23 kJ/g, e.g. at least about 23.7 kJ/g.~~

Claim 8 (currently amended): The method of ~~anyone of the preceding claims~~ claim 1, wherein the metal oxide precursor is a salt or a salt precursor, ~~preferably an organic groups comprising salt, especially a purely organic salt, in particular a salt of at least one carboxylic acid and/or acetylacetonate, optionally as hydrate.~~

Claim 9 (currently amended): The method of ~~anyone of the preceding claims~~ claim 1, wherein the flame has a temperature of at least 1000°C, ~~usually at least about 1500°C, preferably at least about 2000°C, usually 1600 to 2600°C.~~

Claim 10 (currently amended): The method of ~~anyone of the preceding claims~~ claim 1, wherein the droplets have an average diameter of 0.1 to 100 μm , ~~preferably from 1 to 20 μm~~ microns.

Claim 11 (currently amended): The method of ~~anyone of the preceding claims~~ claim 1, wherein the metal is selected from the alkali metal group and/or the alkaline earth metal group and/or the transition metal group, ~~and in particular from cerium (Ce) and/or zirconium (Zr), especially from cerium acetate hydrate and/or zirconium acetylacetonate.~~

Claim 12 (currently amended): A metal oxide that is obtainable by a method of ~~anyone of claims 1 to 11~~ claim 1.

Claim 13 (currently amended): A metal oxide, ~~in particular~~ according to claim 12, that has a surface after heat treatment at 900°C for 2 hours in air of at least 39 m^2/g , ~~preferably above 50 m^2/g .~~

Claim 14 (currently amended): A metal oxide, ~~in particular~~ according to ~~claim 12 or 13~~ claim 12, that is ~~a mixed metal oxide, in particular ceria/zirconia.~~

Claim 15 (currently amended): The metal oxide of claim 14 ~~that is ceria/zirconia,~~
with the zirconium being present in at most 90 atom-%, ~~preferably at most 80 atom-%~~ of total
metal atoms.

Claim 16 (currently amended): A metal oxide, ~~in particular according to claim 14 or~~
~~to claim 14,~~ that is phase stable upon heating at 900°C for 2 hours in air.

Claim 17 (currently amended): A metal oxide, ~~in particular according to anyone of~~
~~claims 14 to 16~~ claim 14, wherein the two or more metals are homogeneously mixed at
~~atomic~~ atomic level.

Claim 18 (currently amended): A metal oxide, ~~in particular according to anyone of~~
~~claims 12 to 17~~ claim 12, that has a dynamic oxygen storage capacity after heat treatment at
700°C for 16 hours in air of at least 1.5 liters O₂ per kg catalyst.

Claim 19 (currently amended): A metal oxide, ~~in particular according to anyone of~~
~~claims 12 to 17~~ claim 12, that is ~~zirconium~~ zirconium stabilized with cerium and/or yttrium,
~~preferably cerium or yttrium, in particular~~ in an amount of cerium and/or yttrium of at most
10 atom-% of whole metal content.

Claim 20 (withdrawn): A catalyst comprising ceria, and/or preferably ceria/zirconia
of anyone of claims 12 to 18 ~~claim 12~~, said catalyst preferably having a monolithic structure.

Claim 21 (withdrawn): The catalyst of claim 20 comprising the ceria and/or the ceria/zirconia mixed with monolithic structure giving material such as Al_2O_3 .

Claim 22 (withdrawn): The catalyst of claim 20 or 21 claim 20 comprising ceria and/or ceria/zirconia in a layer covering a monolithic structure carrier.

Claim 23 (withdrawn): The catalyst of anyone of claims 20 to 22 comprising additional catalytically active substances such as further metal oxides, e.g. titania, vanadia, chromia, manganese, iron, cobalt, nickel, copper oxides, and/or noble metals, e.g. platinum, palladium, rhodium, ruthenium, rhenium, iridium, all of them alone or in admixture with one or more thereof, or alloys thereof.

Claim 24 (withdrawn): The catalyst of anyone of claims 20 to 23, that is platinum/ceria/zirconia.

Claim 25 (withdrawn): Use of a metal oxide of anyone of claims 12 to 18 as at least part of a catalytically active system, in particular for combustion engines.

Claim 26 (withdrawn): Use of a metal oxide of anyone of claims 12 to 18 for mechanochemical polishing.

Claim 27 (withdrawn): Use of a metal oxide of anyone of claims 12 to 18-for at least one of the following purposes: as heterogenous catalysts, as structural ceramics, as battery storage materials, for chemical sensors, for elements in energy production, for solar energy production elements, for electron storage in recyclable battery units, as dielectrics, as ferroelectric, as gas permeable membranes, as pigments, polymer additives, stabilizers, magnetic fluids, polishing powders, additives in metal alloys, in armor fabrication, in microelectronics, as electrode raw material, as phosphors for radiation sensitive elements and in displays, cosmetics, pharmaceutical packaging, additive in food and pharmaceutical applications, fuel cells, and/or superconductors.